In the Claims:

Please amend the claims as follows:

1. (currently amended) A distortion compensation method for correcting distortion of a transmission power amplifier in a radio apparatus, comprising:

      storing, in memory, distortion compensation coefficients for correcting distortion of the transmission power amplifier, each of which conforms to a transmit signal and a past transmit signal preceeding the transmit signal;

      reading a distortion compensation coefficient, which conforms to a present transmit signal and a past transmit signal, out of the memory, and applying distortion compensation processing to the present transmit signal using said distortion compensation coefficient;

      amplifying the transmit signal, to which distortion compensation processing has been applied, by the transmission power amplifier and transmitting the amplified signal; and

      updating said distortion compensation coefficient based upon the transmit signal before distortion compensation and an output signal from the transmission power amplifier.

2. (currently amended) A distortion compensation method according to claim 1, wherein each distortion compensation coefficient is stored in the memory in correspondence ~~with present and past~~ a transmit signals and a difference between the transmit signal and past transmit signal.

3. (currently amended) A distortion compensation method for correcting distortion of a transmission power amplifier in a radio apparatus, comprising:

      storing, in memory, distortion compensation coefficients for correcting distortion of the transmission power amplifier, each of which conforms to a transmit signal and a past transmit signal preceeding the transmit signal;

converting a transmit signal to a quadrature signal composed of an in-phase component and a quadrature component;

reading a distortion compensation coefficient, which conforms to a present transmit signal and a past transmit, out of the memory in complex form;

applying distortion compensation processing to said quadrature signal by performing complex multiplication between said quadrature signal and said distortion compensation coefficient;

applying quadrature modulation to the distortion-compensated quadrature signal, amplifying the quadrature-modulated signal by the transmission power amplifier and transmitting the amplified signal;

demodulating an output signal from the transmission power amplifier; and

updating said distortion compensation coefficient by adaptive signal processing using a difference between the quadrature signal before distortion compensation and the demodulated signal.

4. (original) A distortion compensation method according to claim 3, wherein a distortion compensation coefficient is updated and made to converge to a constant value by adaptive signal processing that uses an LMS algorithm or an RLS algorithm.

5. (currently amended) A distortion compensation method for correcting distortion of a transmission power amplifier in a radio apparatus, comprising:

storing, in memory, distortion compensation coefficients for correcting distortion of the transmission power amplifier, each of which conforms to a transmit signal and a past transmit signal preceeding the transmit signal;

converting a transmit signal to a quadrature signal composed of an in-phase component and a quadrature component;

reading a distortion compensation coefficient, which conforms to a present transmit signal and a past transmit signal, out of the memory in complex form;

applying distortion compensation processing to said quadrature signal by adding a real part and an imaginary part of said distortion compensation coefficient to each of the signal components of said quadrature signal;

applying quadrature modulation to the distortion-compensated quadrature signal, amplifying the quadrature-modulated signal by the transmission power amplifier and transmitting the amplified signal;

eliminating phase rotation, which has been produced by said amplifier, from an output signal of the transmission power amplifier;

demodulating the signal from which said phase rotation has been eliminated; and

updating the real part and the imaginary part of said distortion compensation coefficient in such a manner that a difference between in-phase components and a difference between quadrature components of the quadrature signal before distortion compensation and of the demodulated signal will become zero.

6. (original) A distortion compensation method according to claim 1 or 2, comprising one distortion compensation coefficient, which corresponds to a present transmit signal and a plurality of signals transmitted in the past, is read out of the memory and distortion compensation processing is executed.

7. (original) A distortion compensation method according to claim 1 or 2, wherein one distortion compensation coefficient that corresponds to two signals, namely a present transmit signal and a signal transmitted previously, is read out of the memory and distortion compensation processing is executed.

8. (original) A distortion compensation method according to claim 7, wherein a distortion compensation coefficient, which corresponds to a combination of a present transmit signal and a difference between the present signal and a signal transmitted previously, is read out of the memory and distortion compensation processing is executed.

9. (original) A distortion compensation method according to claim 7, wherein a distortion compensation coefficient, which corresponds to a combination of an instantaneous value of a present transmit signal and an envelope differential value of the transmit signal, is read out of the memory and distortion compensation processing is executed.

10. (original) A distortion compensation method according to claim 1 or 2, wherein a distortion compensation coefficient, which corresponds to a power value of a present transmit signal and a power value of a signal transmitted in the past, is read out of the memory and distortion compensation processing is executed.

11. (original) A distortion compensation method according to claim 1 or 2, wherein a distortion compensation coefficient, which corresponds to an amplitude value of a present transmit signal and an amplitude value of a signal transmitted in the past, is read out of the memory and distortion compensation processing is executed.

12. (currently amended) A distortion compensation apparatus for correcting distortion of a transmission power amplifier in a radio apparatus, comprising:

a memory for storing distortion compensation coefficients for correcting distortion of the transmission power amplifier, each of which conforms to a transmit signal and a past transmit signal preceeding the transmit signal;

a distortion compensation application unit for reading a distortion compensation coefficient, which conforms to a present transmit signal and a past transmit signal, out of the memory, applying distortion compensation processing to the present transmit signal using said distortion compensation coefficient, and inputting the processed signal to the transmission power amplifier; and

a distortion compensation coefficient updating unit for updating said distortion compensation coefficient based upon the transmit signal before distortion compensation and an output signal from the transmission power amplifier, and inputting the updated coefficient to the memory.

13. (original) A distortion compensation apparatus according to claim 12, wherein said memory stores each distortion compensation coefficient in correspondence with a combination of a present transmit signal and a past transmit signal.

14. (original) A distortion compensation apparatus according to claim 12, wherein said distortion compensation application unit reads one distortion compensation coefficient, which corresponds to a present transmit signal and a plurality of signals transmitted in the past, out of the memory and applies distortion compensation.

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15. (original) A distortion compensation apparatus according to claim 12, wherein said distortion compensation application unit reads a distortion compensation coefficient, which corresponds to a combination of a present transmit signal and a signal transmitted previously, out of the memory and executes distortion compensation processing.

16. (original) A distortion compensation apparatus according to claim 15, further comprising:

an arithmetic unit for calculating a difference between a present signal value and a signal value transmitted previously;

wherein the distortion compensation application unit reads a distortion compensation coefficient, which corresponds to a combination of the present transmit signal and the difference between the present signal and the signal transmitted previously, out of the memory and executing distortion compensation processing.

17. (original) A distortion compensation apparatus according to claim 15, further comprising means for calculating an envelope differential value of the transmit signal;

wherein the distortion compensation application unit reads a distortion compensation coefficient, which corresponds to a combination of an instantaneous value of the present transmit signal and the envelope differential value, out of the memory and executing distortion compensation processing.

18. (original) A distortion compensation apparatus according to claim 12, wherein said distortion compensation application unit reads a distortion compensation coefficient, which corresponds to a power value of a present transmit signal and a power value of a signal

transmitted in the past, out of the memory and executes distortion compensation processing.

19. (original) A distortion compensation apparatus according to claim 12, wherein said

distortion compensation application unit reads a distortion compensation coefficient, which

corresponds to an amplitude value of a present transmit signal and an amplitude value of a signal

transmitted in the past, out of the memory and executes distortion compensation processing.